

Donaldson, F.

Medicine an Aggregate of Progressive Sciences.

Presented by  
F. A. Donaldson  
M.D.

THE

VALEDICTORY ADDRESS

AT THE

Commencement of the University of Maryland,

MARCH 9TH, 1867,

✓  
BY PROF. F. DONALDSON, M. D.

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UNIVERSITY OF MARYLAND, March 9th, 1867.

PROF. F. DONALDSON:

DEAR SIR,—Permit us on behalf of the Graduating Class, to request a copy of your "Valedictory Address" for publication, in order that we may at once express our high regard for the author and the merit of his production.

Very respectfully,

SILAS BALDWIN,  
JUNIOUS L. POWELL,  
H. CLAY WARD,  
WILLIAM THOS. ENNETT,  
ALWARD WHITE,  
*Committee.*

BALTIMORE, March 9th, 1867.

GENTLEMEN:

As requested by the Class, through you as their Committee, I herewith send you my Address. Please convey to them my thanks for their kindness, with my best wishes for their success in life.

Very truly, your friend,

F. DONALDSON.

TO SILAS BALDWIN, M. D.  
JAMES L. POWELL, M. D.  
H. CLAY WARD, M. D.  
WILLIAM THOS. ENNETT, M. D.  
ALWARD WHITE, M. D.

*Committee.*

## VALEDICTORY.

Accept, Gentlemen, from the Faculty of the University of Maryland, of their most cordial greetings of you, as graduates in Medicine. After thorough and individual examination of the qualifications of each one of you, they have to-day publicly conferred upon you their highest honor, amid the flattering congratulations of your friends.

It is appropriate, therefore, that they should have the gratification of being the first to hail you as qualified practitioners of Medicine, and of wishing you God-speed on your life-journey.

And, ladies and gentlemen, it affords us great pleasure to commend these physicians to you, and to any other community where they may settle, as worthy of confidence and deserving of most liberal patronage.

I am here to-day, gentlemen, on the part of this Faculty, to perform another duty—a less agreeable one—to give expression to some of the feelings occasioned by severing ties and relations which have existed under circumstances calculated to give rise to much that is pleasant to both parties, and which has created in your teachers an interest in you and your future prospects, which will be of an abiding character.

Be assured, that we fully appreciate how laborious has been your winter's work—the incessant attendance upon Lectures throughout the day and your efforts, by the evenings' readings, to keep up with the various subjects lectured upon. We can, therefore, sincerely sympathize with you on the successful termination of your studies. Your Alma Mater will watch your future with maternal anxiety, trusting that the industry and intelligence you have shown as students, will be ripened into successful perseverance as conscientious and scientific practitioners.



Feeling as we do this interest in your welfare, and having been instrumental in assisting you thus far, and we hope in fostering a taste for your professional duties, as also in cultivating a love for the occupation you have chosen, as the business of your lives, we surely need no excuse for being unwilling to sever our official connection with you, without some parting words of counsel and advice, especially as to the view which you, on starting out on your professional career, are to take of—*Modern Medicine*.

It has been frequently urged, in derogation of Medicine, that it was not a science, in which the rules and deductions could be stated to be of mathematical precision.

We admit the allegation, for medicine has not the exactitude of mathematics, but we deny that this detracts from its intrinsic worth, as compared with other sciences, or that it lessens the usefulness of our profession, when contrasted with that of others. On the contrary, we claim that Medicine is much more comprehensive in its scope and practical usefulness than any isolated science. In fact, it is improperly called a science, for it is a science composite in its nature—an aggregate of sciences.

It has been unfortunate for the full appreciation of Medicine, that it has been spoken of as a single science. It is true, it is a part of one of the natural sciences, because it treats of one of the three kingdoms, the animal—its laws, its principles and its relations. But it ought properly to be subdivided into the sciences of Anatomy, Physiology, Hygiene, Materia Medica and Pathology. We have, moreover, the physical sciences and the science of Chemistry intimately connected with these other sciences. This even is not all of Medicine, for, from the bodies and deductions of these sciences, we have a body of precepts for practical application as our arts, Diagnosis, Prognosis, the Practice of Medicine and Surgery in all their completeness and subdivisions. Moreover, all the natural sciences are collateral sciences to Medicine.

These sciences teach us to know; these arts teach us to act.

But these sciences and the laws, deducible from them, cannot be studied apart. They have to be taken in connection with each other. Although distinct, yet they are all so closely bound up together in the organism that they not only influence, but control each other. The functions of every part of the body are so delicate in their nature, so sensitive to influences, that when one part is touched the vibration extends throughout the whole. In this way Physiology is dependent upon Anatomy, and the physical is modified by the chemical phenomena of the body. And again—both of these are necessarily controlled by the vital laws. Age, sex, and indeed all the conditions and circumstances of life, powerfully alter and change the tissues of the body and the laws regulating the workings of the economy.

Thus, if we reflect upon the complexity of life, we see that it is impossible, from the nature of things, from such a combination of sciences, so intimately connected and so dependent upon each other, that Medicine should have the definiteness of the exact sciences. The subjects connected with Medicine are too intricate, and our knowledge of the minute, extensive, accurate details, renders the condensation of masses of facts into general propositions exceedingly difficult.

But, gentlemen, you are to view Modern Medicine, not only as an aggregate of sciences, with several practical arts deducible from them, but you must remember that these sciences are necessarily progressive in their nature.

Here we have another charge against Medicine—that it has changed—not only, say they, have the sciences changed, but the practice of the arts has also changed. We frankly admit the truth of this allegation also.

The sciences of Medicine, like all other sciences in this age of progress, have changed, because they have advanced—they even more rapidly than many others. The organism has not changed, either as regards its tissues or its structures, or their physiological offices; nor has Pathology, the physiology of disease, changed its type, but,



thanks to modern means of more accurate research, we are finding out more about them. We can appreciate deviations from health more accurately, by knowing better what health is. Such is ever the case—more light, more powerful lenses, better definition of objects, clearer paths before us. It is the media through which we look that alter our views—finding former opinions erroneous, we are in duty bound to renounce them.

As the various physical and natural sciences have furnished, in their advance, means and aids of research, they have been employed in the attempts to fathom the obscure and hidden in the human mechanism and its wonderful workings. The result has been that our knowledge, in all the departments of Medicine, has progressed rapidly. This very progress has prevented mathematical precision in medical doctrines—for laws must be deducible from generalization of masses of knowledge, and, where sciences are progressive, the laws must change. The changes must be improvements, for more science a better art, is pre-eminently true of Medicine.

The fact that Medicine has changed cannot be used as an argument against it, any more than it can be against Astronomy, Geology, or Botany. It is not considered that their deserving attention, is in the least impaired by the fact, that in many points, they have advanced to such an extent that they are virtually changed. So Medicine has changed, because increased light is daily elucidating new discoveries, which add to her efficiency.

The great minds of the past, each and all of them, have aided in uprearing the mighty structure of human knowledge and intelligence in Medicine. Their errors were inseparable from their limited means of exploration, but, as these means improve and are employed, our knowledge must advance. If we reflect upon the magnitude of the task, the attempt to understand and appreciate the most complicated, the noblest, the most perfect work of Creative Wisdom, we are not surprised that it should have taken centuries to penetrate thus far! The intricacy and the

combination of the organic and animal functions is very wonderful. They are all so closely and intimately bound up together as to be necessary each to the other, not only for their integrity, but for their very existence, yet each organ, each tissue, each atom has its appropriate office.

Any one who attempts to study thoroughly, even one branch of medicine, *Anatomy*, cannot but be struck with the great intricacy of this, the mere mechanism of the frame.

Man's unaided vision thought it had discovered the several parts of which he was composed; but, as artificial lenses have added to his penetration into its secrets, he has seen that his former knowledge was, in fact, ignorance. As the manufacturer improved in his magnifying powers, new tissues have sprung into sight. The telescope has not done more for Astronomy than the microscope has for Anatomy. "The animal frame," says Professor Humphrey, "which it is our work to investigate, stands at the summit of the great physical cone, with man at the apex, by whom it is, as it were, slung from heaven, in whom the material is worked up to the point of contract with, and made subservient to, the purposes of the spiritual." The structure of the several tissues and organs has probably been made out as far as the present means permit, and we are occupied now in investigating their mode of formation and connection with one another. They are probably more intimately and closely connected than has been thought. We have high authority (Humphrey) for stating, that "there is now little doubt of the continuity of the nerve fibres and the nerve vesicles: and it is not improbable that the other, or peripheral parts of the nerves are continuous with several tissues, among which they ramify, with the elementary structure of muscle, and prolongation of epithelium, and a very general and extensive continuity is thereby established. Even epithelium, which we were wont to regard as distinct external and easily separable sheath, is found to send its filamentary prolongations into the subjacent organs. The blood-vessels in many animals are continuous with the areolar of the tissues, and in all, the ultimate circulation takes place through



the tissues, the nutritious fluid passing freely to and fro, between their interstices and the interior of the capillaries, where capillaries are present. Such a blending of ultimate tissue, as a remnant of embryonic condition, assists us to explain many things, such a transfer of impressions, and what we call sympathy, that are at present difficult to understand, and is an additional illustration of the simple method by which, in nature's works, great ends are attained."

It would require a recapitulation of each lecture of the course on *Physiology* to state the discoveries and advances in this science of medicine, which is in fact the foundation of rational medicine. We would have to commence with the composition of the blood, and trace its course through the organism. We could not omit mention of the true nature of those wonderful little bodies—the red globules—as anatomical elements of homogenous structure, without cell-wall, (Robin, Beale, Dalton, Flint,) possessing vital powers of repair and reproduction like all other elements, and having, as their rôle, the carrying out the oxygen in a free state, or in very feeble solution to the tissues, and on their return, coming back laden with effete carbonic acid, ready for excretion.

You have been shown the importance of these facts, as also how modern science has dissipated the plausible theories of Lavoisier and Liebig, as to the mode of production of animal heat. These theories, which had permeated every department of Medicine and contaminated them even to our daily therapeutics, supposed a combustion, which cannot be proven, either as of an active or slow nature. We have every reason (Robin, Lewes, Dalton, Flint,) to believe, that animal heat is the result of the complete series of acts of general assimilation—not a function, but the result of many functions.

Moreover, Tscheschichin concludes, from his recent experiments, that the spinal cord, being the centre of circulation and respiration, has an indirect action upon the chemistry of the organism, and consequently upon the ani-



mal heat; and that there is in the brain, centres which regulate the temperature of the body.

It is singular that Anatomists should have left to King and Austin Flint, Jr., to make the discovery of the safety-valve principle of the tricuspid and pulmonary valves of the right side of the heart—and to Hiffelsheim and Robin to demonstrate the fact that the capacity of the right side is from  $\frac{1}{10}$  to  $\frac{1}{3}$  greater than the left,—wonderful provisions to regulate and protect the all-important function of respiration!

Who can estimate the bearing of Hering and Milne-Edwards' observations on the astounding rapidity of the general current of the circulation, or of the still more important fact that, in Pathological increase in frequency of the heart's action, as in fever, this rapidity of motion is usually diminished, and the quantity of blood discharged at each systole, less?—How amazed we are to look through the microscope, with the eyes of Volckman, Poiseulle or Flint, at the phenomena of the capillary circulation, an exhibition of "inexpressible grandeur," especially if we watch there the phenomena of nutrition.

Who would have thought, a few years ago, that science could have explained nearly all the phenomena of the living machine as produced by physical and chemical laws, restricting the term "vital" simply to the formative and reproductive powers of the elements of the tissues! Or who was aware of the correlation of the physical forces before the researches of Helmholtz, Grove and Mayer—that "force which is constantly associated with matter in all its states, is as indestructible as matter itself"—or of the applicability of these laws to the living organism before Lionel Beale, Moxon and Odling proved it! Wonderful influence of solar energy—"the sun the source of all the physical forces operating in living beings." Time forbids my speaking of Marey's and Foster's investigations with the sphgmograph. Bernard has remodelled the digestive processes. Brown-Séquard has made invaluable additions to our knowledge of the several nervous systems.—The fact is indisputable, that

there is not a portion of Physiology, about which views have not been radically changed by modern researches, no matter where we turn.

If we look, for an instant, at the science of *Hygiene*, so intimately connected with Physiology, we cannot but be forcibly impressed with the fact, that much more attention is now paid to the observance of its laws than formerly. Greater familiarity with the immediate influence of light, of heat, of atmospheric air, of exercise upon healthy nutrition, has demonstrated the great necessity of conforming to their requirements. The result has been very advantageous to the preservation of health in the healthy, and to the return of strength to the enfeebled.

The Hygienic treatment of disease is one of the great medical facts of the day.

In no department of Hygiene has the advance had a more beneficial effect than in that of the Philosophy of Food. The purely chemical classification of Liebig, denying nutritive properties to any but his plastic or nitrogenous compounds, had so entered into all departments of medicine, that it was taken as conclusive upon all questions of diet and alimentation. Theoretically, it seemed so true in the laboratory, that its applicability to the living organism was scarcely for years questioned. It agreed so exactly with his plausible theory in regard to animal heat, that there appeared great beauty in the nice adaptation of the one to the other. But the beauty of the theory has been marred by facts, and it is now believed that such distinctions in regard to food, are fallacious, and must, therefore, be abandoned. Whatever a man lives on, that is food; and every article he assimilates is tissue making, and every physical and chemical process of his organism is heat producing. Man cannot live exclusively on any one class of food, no matter whether it contains nitrogen or not. He is omnivorous in his development, and for the integrity of his nutrition, he must have them all.

Another important fact established in Hygiene is, that no kind of food, animal or vegetable, is inflammatory in its



nature. The administration of no article of nutritious food, if digested, will give rise to inflammatory action, or increase the morbid process if begun, or add fuel to any supposed flame. On the contrary, if rendered assimilable by digestion, animal food is essential to the organism's integrity. It would be as philosophical to exclude oxygen from the tissues diseased, by withholding atmospheric air, as to withhold nutriment. They need material for repair, and without it, they will grow weaker, the morbid process will increase, and the individual will perish from inanition.

The tissues can only get nutriment from the blood, and the blood can only obtain it, through the digestive organs. It will not answer to attempt to nourish the tissues on blood laden with effete principles, any more than it would be proper to give them air, contaminated with carbonic acid. No function can go on healthfully, or be restored to health, without its nutrition is sustained, and it cannot be so sustained without pure blood—blood replenished by oxygen and by food.

In *Pathology*, the sister science of physiology, it ought to be expected that there should be corresponding advances from modern investigations, and consequently, change of views. You have seen how, thanks to the brilliant discovery of Bernard, and the subsequent investigations of Blondlot, of Pavy and of George Harley, the pathology of Diabetes has been elucidated. No less has been the increase in the knowledge of the pathology of Jaundice, and of other diseases of the Liver. Modern investigations have shown the true physiological functions of this organ, and disproved many of the views current in and out of the profession, overestimating the value and consequences of its secretions to digestion and to the organism.—You have been shown how the advanced knowledge of the capillary circulation, and its dependence for its normal rapidity and uses upon the exact composition of the blood, its freedom from deleterious compounds, and its uninterrupted flow through the veins—have cleared up the pathology and significance of Dropsy. The researches of Goodsir, of George Johnsen, of

Basham, and of George Harley, have been mainly instrumental in this advance.

But no morbid process has ever attracted so much attention as that known as *Inflammation*. It is met with so frequently, that the views of its nature at different epochs of Medicine, have necessarily had a commanding influence over the current medical doctrines.

The ancients, from remote Hippocratican antiquity, gave it this ugly name, before they knew what the blood was, or how it circulated, and when they had not the remotest idea of the nature of nutritive processes, much less of the morbid phenomena connected with them. Succeeding generations accepted it, and wrangled over their theories attempting to explain its nature. Finally, Stahl suggested the presence in excess of an imaginary entity—a combustible material, which he named phlogiston—which it was our duty to expel, to extinguish, or to starve out. These traditional theories had been handed down to us, enforced by the peculiar views of Broussais, and had permeated every department of Medicine, and had named all inflammations, phlogoses, and thus, dictated that which has been known as the anti-phlogistic treatment, of almost universal application. Chemists long since abandoned the view of there being such a thing as phlogiston, and had explained the true nature of combustion.

But in Medicine, Lavoisier's views of the respiratory functions, and the increased temperature of the part inflamed, and the other visible phenomena, gave color to the received views. But since the processes of nutrition and their variations have been carefully observed, and the truth-telling additional lenses of the microscope have added penetration to our insight into their nature, these old views have been greatly modified. The researches of Lister, Wharton Jones, Virchow, Todd, Bennett, Beale and others, have demonstrated, that there was about as much foundation for these theories, as for those, which expressed belief in the presence of vital spirits, circulating through the body, governing and directing the functions of the various organs.



It was natural, in the obscurity of the twilight of science, that observers should have mistaken commotion for force, and perverted function for exalted activity of function. They were deceived by the angry appearance, and had not the means that modern science affords, of diving beneath the surface and observing, that the apparent strength was real weakness; and, further, that the phenomena which attracted their attention resulted from the suspension of the concurrent functions of the part. They had no histologist to show them the non-striated muscular fibres of the arteries. Bernard had not then demonstrated the control of the nerves of the sympathetic over the muscular contractility of the arterioles, nor the fact, that owing to their paralysis in the inflammatory process, these vessels become dilated and admit more blood locally than the part can appropriate. Thus the equilibrium of the whole circulation is disturbed, and there is actual stasis in the parts diseased, caused by increased adhesiveness of the globules. There was no Lionel Beale to show them, that the only vital force is the formative force, and that the abortive attempts to form tissue from the excessive transudations demonstrated the weakness of the parts. It was only in 1865 that M. M. Estor and St. Pière showed, that the venous blood returning from an inflamed part is of a brighter tint than ordinary venous blood, and, on analysis, is found to contain more than twice as much oxygen—so, instead of there being per-oxidation that is sub-oxidation in inflammation. “The general conclusion seems warranted,” in Anstie’s language, “that inflammation consists in the removal of the modifying influences of the living state, allowing the physical properties of the parts, hitherto restrained, to come into play.”

We are still feeling the baneful influence of the views formerly held on this subject, for, as in other causes where much blood has been shed, the defeated party finds it hard to abandon the contest.

It is a difficult task to unlearn men and to emancipate them from the errors imbibed in their education. All we

desire is truth—truth in all its integrity. Sooner or later, by its own force, by its inherent power, it will prevail.

In *Materia Medica* there have been added some new agents of decided value. Of no insignificant importance are the large number of new pharmaceutical preparations and the isolation of the effective medicinal elements of drugs, such as the alkaloids, resinoids and fluid extracts. But the most important advance in this branch has been from the investigations into the exact effects upon the economy of a number of remedies, such as those made by Brock, Hammond, Anstie, Perrin and Edward Smith, correcting the significance of names which have been handed down to us from the gloom of antiquity.

The foremost in the series of the arts of medicine *Diagnosis*, has been necessarily greatly advanced by improved knowledge of the sciences. Analytical Diagnosis must be accurate in proportion to the reliability of the facts revealed by them. This accuracy has been greatly promoted by the various physical and optical instruments of modern invention, which enable us to look far deeper into the secrets of the organism than, a few years ago, it was ever thought possible.

The dark recesses of the eye have been rendered clear by the ophthalmoscope, and Ophthalmology has, in consequence, assumed a position of commanding influence as an accurate and progressive science. This instrument enables, not only the oculist to diagnose with certainty diseases of the eye, but from the intimate connection of this organ with the brain, it is now materially assisting, through the labors of Hutchinson, Bouchut and others, the general pathologist, to ferret out obscure diseases of the nervous centres.

The Laryngoscope, in the hands of Mackenzie, Gibb, Geo. Johnson, and continental observers, has already startled the medical community by its revelations. Other instruments, constructed on this principle, have been invented, and there is no predicting to what extent of research they may not be carried.

The daily application of the thermometer, to test the tem-



perature of the body, has been furnishing us with many facts, through Wunderlich, Ringer, Parkes and Anstie, which insure greater accuracy in deferential diagnosis, as also of prognosis in fevers and inflammations. The microscope and Chemistry are daily adding their claims to our gratitude for their aid in the study of the excretions.

In *Surgery* great progress has been made within a few years, not only in the intimate knowledge of Surgical Pathology, but in the many appliances in daily practice of the art. Foremost among these I find the anterior splint, of the great merits of which, delicacy makes me hesitate to speak in fitting language in the presence of its eminent author.\* I can safely leave its praises to the grateful hearts of the many who have felt, and thus appreciated its value. We can all, however, estimate the comfort of being placed with a fractured limb in a position of ease and rest, instead of being in one immovable and constrained.

The écraseur of Chassagnac has been acknowledged as a valuable substitute, in many operations, for the sharper bistoury.

The honor of the proposal of the use of metallic sutures may be contended for, for modern Surgery has received a great boon through its invention. We feel proud in acknowledging that the credit of their constant, practical application, is certainly due to our countrymen, Dr. J. P. Mettauer of Virginia, and to Dr. Marion Sims, formerly of Alabama.

It is an interesting fact, that two of the greatest of the most recent advances in surgical practice should have come from physicians. Sir James Y. Simpson, of Edinburgh, the distinguished discoverer of the fluid chloroform, has added greatly to the facility of arresting surgical hæmorrhage, and of accelerating the healing of wounds by his Acupressure. Since the recognition of the fact of the healing of wounds by the first intention or primary union, surgery has scarcely received any greater aid than this.

But, within the past twelve months, there has been added

\*Prof. N. R. Smith.

to the list a means of the greatest practical value in alleviating human suffering, especially in operative surgery. It ranks, indeed, next only to Morton's discovery of general anæsthesia by inhalation. I allude to the discovery of the method of producing local anæsthesia, by Dr. Benj. W. Richardson, a distinguished English physician, well-known to science by many contributions to current medical literature. Already has its use extended to the continent of Europe and across the Atlantic. Three perfectly successful cases of the Caesarian operation, two of ovariectomy, hundreds of all kinds of minor operations, all rendered painless under its influence, have established its claim to a great discovery.

It is pleasant to record, that the prominent surgeons of London, presided over by Paget, have acknowledged their gratitude to the discoverer by a handsome testimonial. Its application, although in its very commencement, has already been vastly extended.

Time fails me to take even a hasty glance at the numberless improvements in operations, such as the brothers Atlee, in the perfection to which they have carried the operation of ovariectomy. What relief of deformities has been given by the Orthopædic Surgery of Guerin, Little and Sayre, of New York, and by the Orthopaxy of Adams, Taylor and Bigg! It would take me hours to do full justice to our countrymen, Marion Sims, Emmet, Bozeman, and Simpson of Edinburg, for the advances made by them, in our knowledge of the nature and treatment of diseases of women. They have literally created a new department in Medicine.

As the physiological processes have been more thoroughly examined into, and their nature ascertained with greater certainty, and the pathological variations better appreciated by more accurate diagnosis, it was to be expected that the *Practice of Medicine and Therapeutics* would necessarily be modified. Such has been the case, although we acknowledge, not *pari passu* with the advances in the sciences. This has been partly in consequence of the ceaseless occupation of busy practitioners, who do not take time to



investigate carefully the results of recent researches, and in some degree, from the unwillingness of many men to take hold of what is new, especially if it impugns the correctness of the principles upon which they have hitherto acted.

The upturning of established views of practice, is no pleasant duty for authors, and it requires considerable courage and even boldness, to teach counter to men's prejudices. Such men as Sir John Forbes, Todd, Bennett, Austin, Chambers and Radcliffe, are not met with frequently.

Must we not expect greater efficacy from our remedies when their employment is founded upon rational deductions drawn from the knowledge of the nature and natural history of the disease, and the known effects of the remedies on the organism? The more general substitution of rational treatment for the empirical use of remedies is, unquestionably, an advance of great value.

Long since, the idea of specific remedies has been abandoned; and the value of empiricism in suggesting remedies, has not only reached its limit of usefulness, but we are now endeavoring to sift medicine of hundreds of worthless and even positively injurious remedies, which have weighed down our Pharmacopeas, and which have contributed, in so large a degree, to the *poly-pharmacy* of the past. —It would be difficult to over-estimate the improvement in practice, of withdrawing to their limited proper sphere, such powerfully depressing agents as Mercury and Tartar Emetic. The improved knowledge of the nature of Syphilis, and its classification among the Zymotic poisons, have confirmed the result of scientific observation, as to the exact value of mercury in its treatment—that it is, in no sense, an antidote or an eradicator of the poison, but that it simply relieves the organism of certain effects of the disease. What a saving this will cause of strength and vigor of constitution, from the injurious effects of mineral poisoning!

We everywhere see still greater reluctance to treat disease by harsh or heroic remedies, for we are learning that nature yields more promptly to mild and gentle means! Nowhere is this better shown than in the abstaining from the abstrac-

tion of blood, except for mechanical or local purposes, and even then with great caution. These changes in therapeutics are not from any new theory, much less from fashion, but from scientific physiological principles—from understanding better, the true nature of inflammation, as well as appreciating more fully, the ill effects of withdrawing from the tissues that, which is essential to their already depressed vitality. Now we substitute for the old compound prescriptions, simple remedies, given with a definite object, always recognizing the true position of Nature as the curer, and medicine as her handmaid and assistant—laying great stress upon the observance of hygienic and sanitary laws. Disease not being an entity, but a variation or perversion from the healthy status, we treat the physiological individual diseased, and endeavor to bring back his functions to their normal standard. This cannot be done by exhausting still further his organism, by depriving it of the conditions of health—such as pure air, light, water or food—still less, can the commotion be checked by drawing off the means necessary to repair the excessive waste of tissue. These deductions from scientific data have been fully confirmed by the more favorable results of the restorative treatment of P<sup>n</sup>eumonia and other inflammatory diseases:

This, then, is a capital point in the modern treatment of disease—the necessity of alimentation in disease, based upon the law of the animal economy, that the income must be proportioned to the expenditure—the reverse of the law of political economy,—greater destruction of tissue, greater demand for food. Formerly, even paturient women were kept exhausted by depriving them of food, so impressed were men with the idea that food fostered an inclination to inflammation.

Time would fail me to speak of the many valuable points of modern rational treatment of disease, the most effective of all methods. You have witnessed the beneficial results of the alkaline treatment of Rheumatism: the acid treatment of Typhoid and Typhus Fevers; the ammonia treatment of Scarlet Fever, and that of Dysentery by Osmotic



agents. Lives are daily saved by the eliminating treatments—the exciting to vicarious action other organs of the body, such as in Uramic Coma. These all come from the analytical study of the excretions.

We have, moreover, now great attention paid to local medication, especially by means of atomized fluids, as observed by Girons, Lewin, Zdekauer, Beigel, and Da Costa, of Philadelphia. Not only are they applicable to external parts of the body, but also, by means of ingenious instruments, to the interior of the larynx, posterior nares, uterus, and bladder.

The greater certainty, by these means, of reaching the parts aimed at, than through the general circulation, where it has first to pass through the digestive organs, commend them to us as agents of value. Practically, this mode of medication, as through the hypodermic syringes, has been of inestimable service as a prompt means of relieving suffering. Dr. Broadbent's proposal to inject acetic acid into cancerous growths, was suggested by the well-known influence of this agent on the cells when on microscopic slides. We have already had numerous cases reported, where it has had an astonishing effect in arresting the further increase of the growths, and of producing absorption of the portions developed. Further observation is necessary to test, to what extent the treatment is serviceable, and to what kind of cases it is especially applicable.

Dr. Lobell's suggestion for the treatment of tubercular disease by oleaginous substances previously emulsioned by pancreatine, promises to be a valuable one.—These that I have mentioned, are only a few illustrations of the decided advantages in our every-day Therapeutics.

Before I conclude, I must allude to the great benefit derived from advanced sanitary science. Cities and nations, within the year, have been saved the fearful ravages of Asiatic cholera, by the recognition of the modern views of its portability and communicability—and thus, by strict adherence to general and domestic quarantine regulations, it has been kept at bay.

No less valuable in its results, has been the view now received of the virulently infectious character of Typhus fever, which, although originally of foreign importation, has now, apparently a permanent habitation in our large cities. The isolation of the cases, together with the constant renewal of the air by ventilation, and the destruction, by disinfectants, of the deleterious emanations, have, in many instances, stayed the progress of this destructive element of mortality.

Even, gentlemen, from these hasty glances at these departments of Medicine, we have enumerated sufficient to prove our view of their progressive character. Few persons are aware of the benefit to the human race of these great advances. They will, perhaps, be surprised to learn, that vital statistics show, they have added at least five years to the average duration of human life. So true is this, that life insurance companies, with their rates based upon the old mortality tables, are amassing fortunes.

We thus have, not the old system, as it is sometimes irreverently designated, but a combination of that, which was valuable in the old, with all that is true and good in the new facts, discovered by advancing science. Medicine is then a noble old exogenous growth, matured by age and yet acquiring, by yearly additions to its structure, that which increases its firmness of fibre and adds to its strength—each new layer forcing the previous additions into their proper position, by compressing from their substance whatever was valueless, and leaving only what really adds to the solidity of the trunk. In Medicine, as in the organism, wherever there is development, growth, or even life itself, we meet with disintegration—but, you remember, it is interstitial retrograde metamorphosis—the forms and shapes remain the same. The Medical Sciences and Arts, although changed and advanced, and continuing to progress, yet they retain their original forms and designations, but with their power of usefulness to the human race, greatly increased. In all nature we see this law—nothing remains stationary that has life—motion and change constitute life.

“The flowers even dwindle and die in the stillness of noon.”



It is amusing to hear the advocates of the ephemeral so-called systems of the day, with their transcendental theories and nihilities of doses, imputing these changes to their influence in modifying our practice. It is not the first time we have heard of flies upon the wheel priding themselves, that they were the cause of the velocity and noise of the wheel.

With such rapidity have the Medical Sciences developed in their proportions, that the propriety of encouraging specialities in Medicine cannot, any longer, be questioned. So vast and extensive has the field become, and so much knowledge has been amassed, that for the cultivation of the one, and the acquirement of the other, a subdivision of labor is imperative. Not only should there be the old distinctions between physicians, surgeons and obstetricians, but special organs, and even special diseases should be selected by individuals who, by concentration of their study upon them, will acquire such familiarity with them, that they will force conscientious general practitioners to call them in consultation, or to place them entirely in their hands.

There can be no danger in having specialities, provided the individuals be required, before devoting themselves exclusively to any one branch or disease, to have a thorough education in general medicine and surgery with the preliminary branches—otherwise, they might not give each part of the organism its proper correlative importance in health and disease.

We will thus promote, both the advance of science and the usefulness of the medical art. Our greatest improvements and discoveries have come from specialities, and we may expect from them new investigations, new studies, and thus, new results. As the economical sciences have enlarged their scope, they have been divided for laborers. --Let us learn in this, a lesson from nature's perfect work—the organization of the animal kingdom. In the lowest animals, there is but one organ, which is sufficient for their low standard of function. The animal exists and that is all. As we go up

in the scale of animals, the functions increase in number and in importance, and with them, new organs are supplied. The advance in development creates demand for additional organs to perform the more delicate and complicated functions. We see here the grand principle of division of labor for the perfection of work!

Such being the nature of the medical sciences and arts, necessarily progressive, aye, progressively progressive, what is your duty in the premises? Plainly to keep up with the progress, in order that you may fulfil your duties in your responsible vocation. The proper estimate of health, and of the sacredness of life, demand from you that you should use every possible means of becoming informed of this progress. You will find it no easy matter amid the incessant calls of practice; but, unless you are prepared to do so, and to make your professional duties paramount to every earthly occupation, you ought to abandon the field to others—for, so surely as you do not advance, you will retrograde. The old Greek motto, “not to advance is to fall back,” is pre-eminently true in medicine. From the nature of the office you have undertaken, you are pledged to use all the means discovered by science and accessible to you, for the cure of disease and the alleviation of human suffering. Those who entrust to you their lives, and the lives of their wives and children, have a right to demand it of you.

If, from ignorance of any known means, you fail in your treatment of disease, you are as derelict in your duty, as if you went out ignorant of the antidotes to the ordinary poisons; and if, in consequence, life is lost, you are culpable in the highest degree. Is not such the case if, from neglect or inertia, you continue to treat disease upon principles, proved to be erroneous by modern physiological or pathological investigations? It will not relieve you from the responsibility for you to reply, that your teachers or your text books taught you differently a few years back. The point to which we have conducted you, is to be your starting point. Even, if you were thoroughly familiar with all that is known in Medicine at this day, still your diplomas would



be mere certificates that you had commenced your studies. You are to be students as long as you continue to practice medicine. I hesitate not to say that any one who remains, for a few years, ignorant of what is passing in medicine, is not fit to practice his profession—the sciences will go so far beyond him, that he cannot wield effectively the instruments of his art. If he remains long away from contact with the progress and returns to it, he will feel as little at-home, as did Rip Van Winkle after his prolonged slumber.

You must, therefore, cultivate every means of acquiring information. You must mingle with other men in medical societies, otherwise you will soon become contracted in your views; for, you must remember, if you are guided simply by your own limited experience, you will surely go wrong. Laws and deductions in medical sciences, ought to be drawn from large numbers of observations. Let your libraries be in receipt of the really valuable medical literature, as it comes from the press, especially of the monographs and works of the most distinguished authors. Let your books be your greatest luxuries—let your shelves be the last places, where you economise in your expenditures. Money spent there is well spent; new books are as necessary to you, as tools are to a mechanic; you cannot do your work well without them. Do not confine your purchases to home publications, but keep your orders at the importer. Let your office table be supplied with the most prominent domestic and foreign journals and reviews. As Tyler Smith has expressed it—“In consultations two or three meet; in societies hundreds stand face to face, and have the privilege of exchanging thoughts, but in the periodical press, we have the collision of thousands of minds busied with the same subject: thus more truth is elicited, more progress made than could be by solitary thinkers.” Be not content with the very superficial information obtained from Abstracts and Retrospects, for they will furnish you with little more, than the headings of the medical facts.

I need not tell you that you are to snatch time for your studies whenever you can—in your moments of rest, or

while moving in your carriages over rough pavements or muddy roads. If you do not, you will spend much time in idleness of thought—the worst form of idleness. That “time is money,” may be a very good maxim for the mercantile community, but for students, it expresses a very low estimate of its value. To them it is far more valuable than money—it is knowledge—it is wisdom. To the medical student, when properly improved, it may be the saving of human life.

It is then clearly your duty not to rest where your Alma Mater has conducted you, but to press forward with the most advanced. Remember that Harvey was the pupil of Fabricius. The demonstration by the latter of the valves of the veins, gave the former the impetus, which culminated in the discovery of the circulation. Bernard learned how to experiment from Magendie, and then far eclipsed his master by the brilliancies of his discoveries.

Plato had written, we are told, over the wall of his academy—“Let no one but a mathematician enter here.” Over the portal of the medical profession is inscribed in unmistakable characters—let no one enter, who is not so thoroughly imbued with the love of truth, that he will gladly accept it, even when it overturns his previous convictions, and pronounces erroneous his former mode of practice.

When we state that medical doctrines have changed, we surely need not defend ourselves against the charge of being disrespectful to the great minds of the past. They did their work in advancing science. They made their additions to the mighty structure, and their work has strengthened it, and will live forever, but it was impossible that they could complete it.

Harvey by his discovery rendered his name immortal, and revolutionized medicine: yet he was ignorant of the capillary circulation. He knew nothing of the office of the red globules, nor of the intimate process of nutrition. We hesitate not to say, that a man who merely knows now, what Harvey knew, does not understand the circulation.

We are scarcely guilty of irreverence when we say, that

by the aid of the binaural stethoscope, and the researches of Fournet, of Walshe, of Skoda and of Flint, modern auscultators can make better analytical diagnoses than could Laennec, the great discoverer of auscultation. Is it not true, that any one who thoroughly appreciates the conclusions of Ricord, of Bumstead, and above all, of Hutchinson, has a more intimate knowledge of syphilis than John Hunter. With the full benefit of Bernard and Brown-Séquard's investigations into the functions of the nervous systems, ought we not to know more of them than Sir Charles Bell did?

Are we disrespectful to Rush and Potter, when we acknowledge that Gerhard, William Jenner, Parkes, and especially Murchison, have established the exact nature of essential fevers, more correctly than they did?

It is useless to multiply instances. We intend no disrespect to the giants of the past, even of a few years ago, or if now living. We know that a man can only guide his footsteps by the sunlight of the hour when he walks. We merely restate an old adage, that "a dwarf on a giant's back can see further than the giant."

We wish you to go out as missionaries of modern science, imbued with the advanced views of the day. We warn you that you will meet with opposition, and even ridicule, from many whose heads are covered with the gray lichens of age, and to whose opinions you would naturally yield acquiescence. They will cavil at your practice, and even denounce whatever differs from what they were taught many years since. Bear it patiently, and show by the skilful use you make of your knowledge, that your views are correct. The shades of error will soon be dissipated by the light of truth. "Truth," we are told, "is more incompressible than water. If they compress it in one way, it will exude through the compressing mass—the more visible through the attempts to compress it." Remember, it is no easy task to eradicate errors from men's minds. There is a natural pride of opinion, and an inertness to take up new things and new views. It requires an independence of



character, but rarely met with, for a man to acknowledge that he has been practicing on erroneous principles. It is not often that we meet with men of the greatness of mind of Sir Thomas Watson, to frankly confess that he had publicly taught in former years that, which he now, by the light of modern investigations, believes to have been incorrect. He states, in print, that he had been influenced by the traditional teachings of those who had preceded him, to recommend in many cases depletory treatment; and, further, to explain the change in modern practice, by a change-of-type theory of disease, which he now believes to be, in reality, due to improved means of diagnosis and advance in our knowledge.

It is refreshing to meet with as great a man, as that most eminent living clinician, Trousseau, who, after for many years recommending venesection in cerebral hæmorrhages, now, having been convinced, by the pathological investigations of others as to their nature, and by his own observations of the ill effects of his treatment, has abandoned it, and so states in his latest publication. Not less worthy of imitation is the honest and fearless conduct of the distinguished consulting surgeon of St. Bartholomew, Mr. Skey, who publishes his adoption of modern views, although contrary to what he formerly taught. But why should medical men be so bound down to their old opinions? To hear some men talk you would think that medical doctrines were matters of revelation, to question which was profanity. Instead of recognizing the fact, that they must necessarily vary with the advance of science—old dogmas and deeply-rooted prejudices must give way before advancing science. We must recognize, with Harley, "that what we regard as scientific truth is, in no case, incontrovertible certitude, and that the deductions of to-day, in progressive sciences, like those of Medicine, may require material alteration, when viewed in the light of the morrow. But if men fold their arms and refrain from acting until every link in the chain of knowledge is forged, all progress will be arrested, and the day of certainty still further postponed." Lionel

Beale forcibly expresses it, when he writes—"the very soul of true science is the continual testing of conclusions already arrived at." Who can examine into modern Physiology without seeing that some of the researches within the last few years, have as completely upset the views entertained previously, as Harvey's discovery did the views of the followers of Galen, and that their effect upon practical Medicine ought to be fully as revolutionary!

You can have every confidence, in entrusting those, who may become your students, to the care of this University, that they will be taught the sciences at their stage of advancement. As an earnest of this, see the fact that, within two years, she has added to her corps two professorships, additional clinical teaching, and established a summer course of lectures on supplementary branches and specialities. These changes were made to keep pace with the progress in these branches. Indeed, your Alma Mater is pledged to teach modern Medicine in all its fulness and comprehensiveness, and if she were not, she would be unworthy of her trust.

The object of these remarks has been accomplished if they have impressed upon you, in some degree, the importance of the duty before you of keeping, by incessant study, on a level with the science of the day.

In this way only, will you be prepared to act with promptness and efficiency, and thus acquit yourselves properly of the fearful responsibilities you have assumed.

You need this warning, for it is a very easy matter to fall quietly into a regular, routine mode of viewing and of treating disease. It chimes in so pleasantly with our natural proneness to indolence. We can thus avoid the fatigue of keeping ourselves alive, and we can gradually subside into a state of indifference, as to what is passing in the medical world, lulling our consciences with the reflection that the many new things may not be true; and, at all events, that it will be time enough to trouble ourselves about them when others have thoroughly tested their value. Instead of this course, we beg of you to welcome gladly whatever promises you aid in your work, beset as it is with



difficulties and complications on all sides, both as to the nature of disease and its appropriate treatment.

Each individual case, with all its its peculiarities and variations, will furnish you with abundant food for study. Your own store of knowledge and the recorded observations of others will be called into requisition to interpret the significance of the symptoms.

Your profession is not only a laborious one, but, as you were warned at the commencement of this session, it is not one of ease and comfort. It is full of self-sacrifice, of anxieties involving great physical and mental fatigue. Now it is too late for you to withdraw, for you have been irrevocably enlisted. You can never get rid of your Doctorate. The title will always be prefixed to your name, and this demands that your professional duties shall be paramount to all others. Throw, then, yourselves into the work with all the earnestness of your character, and success in life will as surely crown your exertions as that the sun rises in the east.

Be careful never to look upon your patients from a cold professional point of view, as simply cases of disease, but regard them with the all interest and the tenderness due to poor suffering humanity. Let not, then, slights or temporary annoyances discourage you, but after every effort to make yourselves familiar with your duties, trust to higher principles to sustain you. Thus, with a single eye to your usefulness, your position will be ennobling in the highest degree, second only to the Divine Mission for the cure of souls.